

ABSTRACT

Disclosed is a method for producing surface-modified materials, such as core-shell materials with the core and the shell(s) being different distinct phases, or materials with a concentration gradient of one or more dopant or substituent element(s) from the surface to the bulk. The method comprises (i) treating the bulk of material with a solution containing a first solvent and at least one flocculant comprising a soluble polymer so that the flocculant adheres to the bulk; (ii) subsequently contacting the flocculant-treated bulk of step (i) with a dispersion containing a second solvent and the particulate solid particles to deposit the particulate solid particles on the flocculant-treated bulk ; and (iii) subsequently treating the resultant of step (ii) with heat. This method can in particular be applied to produce surface-modified cathode materials for Li batteries with improved performance.